5-Day Cement Industry Training Course
In

COST REDUCTION IN CEMENT PRODUCTION (SITE VISIT)

Cairo - Egypt, 21 – 25 Sep. 2026

COURSE LEVEL: ADVANCED

COURSE OVERVIEW:

In a highly competitive global market, the ability to reduce production costs while maintaining quality is the hallmark of a successful cement plant. This course defines the primary cost drivers in cement manufacturing—energy, raw materials, maintenance, and labor—and provides a framework for systematic reduction. By analyzing the "Cost per Ton" at every stage of the process, participants will learn how to identify inefficiencies and implement high-impact savings initiatives.

The scope of this training is broad, covering technical optimizations such as heat recovery and power saving, as well as strategic initiatives like alternative fuel substitution and the use of supplementary cementitious materials (SCMs). It explores the principles of Lean Manufacturing and Total Productive Maintenance (TPM) as tools for reducing waste and downtime. Furthermore, the course addresses the logistical costs of quarrying and dispatch, providing a holistic view of the plant's financial performance.

Coverage includes the use of "Expert Systems" for automated process optimization, the management of spare parts inventory, and the reduction of specific energy consumption . Through an insightful site visit to a top-performing facility, participants will see firsthand how cost-saving technologies and a "culture of efficiency" are integrated into daily operations. Attendees will gain the strategic and technical skills needed to lead cost-reduction projects that significantly enhance the plant's bottom line.

COURSE OBJECTIVES:

After completion of this course, the participants will be able to:

- Analyze the "Total Cost of Ownership" for cement plant assets.
- Identify and quantify the major energy-saving opportunities in the plant.
- Optimize the "Clinker Factor" to reduce the cost of finished cement.
- Evaluate the financial benefits of alternative fuel substitution.
- Implement maintenance strategies that reduce the cost of spare parts.
- Calculate the Return on Investment (ROI) for energy-efficient upgrades.
- Reduce "Specific Power Consumption" through mill and fan optimization.
- Utilize "Lean" principles to eliminate waste in the production process.
- Manage raw material costs through quarry optimization and ARM usage.
- Improve "Kiln Reliability" to minimize the high cost of unplanned stops.

- Optimize logistical and dispatch costs for bulk and bagged cement.
- Prepare a comprehensive cost-reduction roadmap for their department.

TARGET AUDIENCE:

This course is intended for Plant Managers, Financial Controllers, Production Engineers, Maintenance Managers, and Project Leaders.

TRAINING COURSE METHODOLOGY:

A highly interactive combination of lectures, discussion sessions, and case studies will be employed to maximize the transfer of information, knowledge, and experience. The course will be intensive, practical, and highly interactive. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. The attendants will also be encouraged to raise more of their questions and to share in developing the right answers using their analysis and experience. There will also be some indoor experiential activities to enhance the learning experience. Course material will be provided in PowerPoint, with necessary animations, learning videos, and general discussions.

The course participants shall be evaluated before, during, and at the end of the course.

COURSE CERTIFICATE:

National Consultant Centre for Training LLC (NCC) will issue an Attendance Certificate to all participants completing a minimum of 80% of the total attendance time requirement.

COURSE OUTLINE / COURSE CONTENT:

MODULE 1: FINANCIAL FUNDAMENTALS OF CEMENT PRODUCTION

- Understanding the Profit and Loss (P and L) statement of a plant.
- Fixed costs vs. Variable costs in cement manufacturing.
- Benchmarking: comparing your plant against global best practices.
- The role of the "Cash Cost" in market competitiveness.
- Setting SMART goals for cost-reduction initiatives.

MODULE 2: ENERGY COST REDUCTION: THERMAL

- Optimizing the specific heat consumption (kcal/kg).
- Reducing heat losses in the preheater and clinker cooler.
- The economics of Waste Heat Recovery (WHR) systems.
- Managing the "False Air" ingress to save fuel.
- Improving the efficiency of the kiln burner system.

MODULE 3: ENERGY COST REDUCTION: ELECTRICAL

- Targeting high-consumption areas: Mills and Fans.
- The benefits of Variable Frequency Drives (VFDs) for power saving.
- Optimizing the "Specific Power Consumption" (kWh/t) of cement.
- Managing peak-load power costs and time-of-use tariffs.

- Compressed air management: identifying and sealing leaks.

MODULE 4: ALTERNATIVE FUEL SUBSTITUTION STRATEGIES

- Calculating the "Financial Substitution Rate" of waste fuels.
- Analyzing the "Gate Fee" income vs. procurement costs.
- Capex vs. Opex for alternative fuel feeding systems.
- Impact of alternative fuels on clinker quality and "re-work" costs.
- Carbon credits and their role in fuel economy.

MODULE 5: CLINKER FACTOR OPTIMIZATION

- The economic power of SCMs: Fly ash, Slag, and Limestone.
- Reducing the clinker content while maintaining cement strength.
- Impact of high-efficiency separators on blended cement costs.
- Chemical admixtures and grinding aids as cost-saving tools.
- Quality-to-cost balancing for different cement grades.

MODULE 6: MAINTENANCE COST MANAGEMENT

- Moving from "Breakdown" to "Predictive" maintenance.
- Optimizing the spare parts inventory and "Dead Stock" reduction.
- Total Productive Maintenance (TPM) and the cost of quality.
- Negotiating with suppliers and service contractors for better rates.
- Extending the life of wear parts through hard-facing and better alloys.

MODULE 7: RAW MATERIAL AND QUARRY OPTIMIZATION

- Reducing the cost of "Strip and Haul" operations.
- Optimizing the blasting pattern to reduce primary crushing costs.
- Using "Alternative Raw Materials" (ARM) to lower material costs.
- Managing the "Yield" of the quarry and reducing waste.
- Logistics: belt conveyors vs. truck transport costs.

MODULE 8: PROCESS AUTOMATION AND EXPERT SYSTEMS

- The ROI of "Expert System" software for kiln and mill control.
- Reducing labor costs through automated laboratory and packing systems.
- Using Big Data and AI to predict and prevent process failures.
- Digital twins for energy and process optimization.
- Impact of automation on product consistency and waste reduction.

MODULE 9: SUPPLY CHAIN AND LOGISTICS SAVINGS

- Optimizing the packing plant: reducing bag breakage and waste.
- Bulk vs. Bagged cement: a cost-benefit analysis.
- Managing "Final Mile" delivery costs and transport efficiency.
- Inventory management: balancing silo levels and dispatch speed.
- Procurement strategies for coal, gypsum, and grinding media.

MODULE 10: HUMAN CAPITAL AND ORGANIZATIONAL EFFICIENCY

- Optimizing the plant headcount and departmental structures.
- Training and multi-skilling as a tool for labor cost reduction.
- Reducing the cost of safety incidents and industrial accidents.
- Incentive programs for staff-led cost-saving ideas.
- Outsourcing vs. In-sourcing: making the right financial choice.

MODULE 11: SITE VISIT: PRACTICAL EFFICIENCY AUDIT

- Walking tour focusing on "Waste Identification" (Muda).
- Review of the energy monitoring dashboard in the control room.
- Inspection of the WHR plant and alternative fuel station.
- Discussion with the Plant Manager on successful cost-saving projects.
- Practical exercise: identifying three "Quick Wins" on-site.

MODULE 12: DEVELOPING THE COST-REDUCTION ROADMAP

- Group project: Building a business case for a plant upgrade.
- Prioritizing initiatives based on "Impact vs. Ease of Implementation."
- Monitoring and reporting the success of cost-reduction projects.
- Final exam and assessment of cost-management skills.